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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/812,915

03/31/2004

Hiroshi Satoh

023484-0161

5697

22428 7590 05/21/2007

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EXAMINER

BROADHEAD, BRIAN J

ART UNIT

PAPER NUMBER

3661

MAIL DATE

DELIVERY MODE

05/21/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/812,915

**Applicant(s)**

SATO ET AL.

**Examiner**

Brian J. Broadhead

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-9 is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2-26-07 has been entered.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 3, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tange et al., 2004/0107035, in view of Matsumoto et al., 2004/0153228, in further view of Kondo et al., 2003/0045983.

3. Tange et al. disclose a camera photographing a travel path in a traveling direction of a vehicle in paragraph 18; a lateral displacement calculating circuit that calculates a lateral displacement of the vehicle with respect to the travel path according to an image of the travel path photographed by the camera in paragraph 18; a differentiator that calculates a differential value of the lateral displacement in paragraph

28; a vehicle speed sensor that detects a vehicle speed in paragraph 19; a relative yaw rate calculating section that calculates a relative yaw rate with respect to the travel path of the vehicle on the basis of the lateral displacement, the differential value of the lateral displacement, and the vehicle speed in paragraph 32; an actuator that provides an assistance force for the steering mechanism and an actuator controlling section that drivingly controls the actuator in a direction toward which the relative yaw rate is canceled on the basis of the relative yaw rate in paragraph 39; the lateral displacement calculating circuit comprises: a white line recognition circuit that recognizes white lines located on both ends of the traveling path; a center position calculating circuit which calculates a center position between both ends of the travel path; and a deviation quantity calculating circuit that calculates a lateral displacement of the vehicle with respect to the center position of the travel path in paragraph 18; the white line recognition circuit recognizes the white lines a predetermined distance ahead of the vehicle and the deviation quantity calculating section calculates a variation rate of a relative angle between the center position of the white line and the vehicle in paragraph 18; the differentiator comprises a filter processing circuit in paragraphs 30 and 31.

4. Tange et al. do not disclose the actuator is a steering actuator. Matsumoto et al. (same inventors) discuss that either a steering actuator or driving torques can be used interchangeable in a lane deviation prevention system in paragraph 2. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a steering actuator instead of driving torque to influence the steering because it would prevent brake wear and work on vehicles that aren't all wheel drive. Matsumoto

et al. may disclose that a steering actuator may not be the best mode, but this disclosure doesn't make it any less obvious to one of ordinary skill.

5. Tange et al. and Matsumoto et al. teach the limitations as set forth above. They do not disclose the actuator controlling section outputs a steering torque command value to the actuator, the steering torque command value being a sum of a steering quantity in accordance with the driver's steering operation and the vehicle speed and a stability direction quantity calculated on the basis of the calculated yaw rate. Kondo et al. teach the actuator controlling section outputs a steering torque command value to the actuator, the steering torque command value being a sum of a steering quantity in accordance with the driver's steering operation and a stability direction quantity calculated on the basis of the calculated yaw rate in paragraphs 54-63. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teachings of Kondo et al. in the invention of Tange et al. and Matsumoto et al. because such modification would provide a the details necessary to construct a device based on steering actuator control versus brake and wheel torque. Matsumoto et al. provides a teaching that one of ordinary skill would recognize that one could use brake and wheel torque control or a steering actuator to perform the lane departure control. Matsumoto does not provide the details of a steering actuator system. Kondo et al. provides the details of a steering actuator control necessary to bring Matsumoto's teaching to fruition.

6. Kondo et al. does not disclose their steering quantity from the driver depends on vehicle speed. Official notice is taken that it is well known in the art to vary steering

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control based on vehicle speed. It is known as speed sensitive steering and provides for more assist when at low vehicle speeds and less assist at high vehicle speeds. This is known to provide help while parking while also providing good steering feel at higher speeds. It would have been obvious to one of ordinary skill in the art at the time the invention was made to vary the steering quantity based on vehicle speed because it provides for better driver control. Many production vehicles have had this as a standard feature for at least a decade.

***Allowable Subject Matter***

7. Claims 7-9 are allowed.
8. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose a pseudo differentiation filter constituted by a predetermined forward filter as defined in the specification.

***Response to Arguments***

9. Applicant's arguments with respect to claims 1, 2, 3, and 5 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments have been fully considered and the new rejection has been set forth to more clearly address the issues. The limitation at issue basically claims that the actuator output is a function of the driver's input to the power steering system and the correction produced by the lane departure system. It is hard to imagine a lane departure system that uses the same actuator as the power steering system not working in this manner. Kondo et al. provide a detailed discussion of how a conventional system would operate in this manner.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Broadhead whose telephone number is 571-272-6957. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BJB

*Brian J. Broadhead*  
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